

**Statement of  
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National Aeronautics and Space Administration  
before the  
Subcommittee on Science, Technology, and Space  
Committee on Commerce, Science, and Transportation  
United States Senate  
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I appreciate the opportunity to appear before the Subcommittee today to share with you the vision and mission of the NASA Education Program. Since becoming Administrator, it has been my fortune to meet some of the most innovative and imaginative people our Nation has ever produced. The men and women of NASA do remarkable things every day. From designing, constructing and operating an orbiting laboratory traveling at over 17,000 miles an hour, two hundred and fifty miles above the Earth, to designing new systems and technologies that enable our aircraft to fly faster and safer, these revolutions of engineering and American know-how are testament to this Agency’s ability to transform our way of life in countless and unimagined ways. As we all know, NASA’s past is legendary but its future is full of even greater promise. Our mission in this endeavor is Education and our charge as directed by our new Mission Statement is *to inspire the next generation of explorers... as only NASA can.*

With a charter like no other, NASA has led some of the most unique missions in the world. From traveling to low-Earth orbit and walking on the Moon, to viewing the farthest reaches of our solar system, NASA has continually worked to share the discovery and adventure along the way. Each of these achievements are things that only NASA can do and as such, it is this Agency’s responsibility to be sure that those experiences are shared with inquisitive minds who want to go even further. For those minds to be ready for the future challenges that await them, we as an Agency must do everything we can to inspire and prepare them.

Every mission we accept requires the sharpest of minds, the strength of purpose and the drive to challenge barriers and frontiers. The minds we seek to develop will do those things and more for NASA, but more importantly, they will do these things for our Nation as well. NASA not only needs a future with more engineers and scientists, but our Nation does as well. Our current and future missions are dependent upon such minds and it is our charge to help our Nation prepare them for the challenges ahead. As the Hart-Rudman Commission found, “Second only to a weapon of mass destruction detonating in an American city, we can think of nothing more dangerous than a failure to manage properly science, technology, and education for the common good over the next century.”

The Commission’s Report further declared that, “The harsh fact is that the US need for the highest quality human capital in science, mathematics, and engineering is not being met.”

Failure is not an option in this endeavor. NASA’s future missions, as well as our national and economic

security, are dependent upon our success. The human capital proposals contained in title II of our proposed NASA authorization bill for fiscal year 2003 which we submitted to the Congress on May 29 are intended to address some of these challenges. These legislative tools are consistent with government-wide provisions contained in the President's Managerial Flexibility Act. It is imperative to pursue enactment of these vital tools for NASA to help meet our recruiting and retention of human capital. Together with the National Aeronautics and Space Administration Science and Technology Career Enhancement Act previously submitted to Congress on July 20, 2001, this legislation will give NASA significant tools with which to improve the pipeline of science and engineering talent for our Nation's workforce.

I look forward to working with the Committee on this legislation.

Complementing these efforts is NASA's FY03 request for Academic Programs. The Agency's \$143.7M request has two components – base funding for the Education Program and the Minority University Research and Education Program:

- 1) The Education Program request is for \$61.6M. This request provides funding for a comprehensive program that includes: \$11.3M for student support, \$9.2M for teacher/faculty preparation and enhancement programs, \$30.4 for state-based support of education, \$9.1M for educational technology, and \$1.6M for evaluation.
- 2) The Minority University Research and Education Program request is \$82.1M. This request provides funding for Historically Black Colleges and Universities (\$49.7M) and Other Minority Universities (\$32.4).

These future investments, combined with the Congress' and Administration's previous support have built a remarkable foundation for the Agency's education programs. This foundation though is in need of expansion. Not by the addition of more dollars, but rather through closer coordination within the Agency's internal operations as well as with our education partners, the U.S. Department of Education as well as other public and private sector stakeholders. I look forward to working with the Committee on these and other efforts that impact America's space and aeronautics program.

With these thoughts in mind, there are five key points covered in this testimony:

- 1) NASA has made Education a core mission of the Agency;
- 2) NASA accepts the responsibility of inspiring the next generation of explorers;
- 3) NASA is reaching out to minority communities to make them integral partners in the Agency's mission;
- 4) NASA will work with other federal, state and local governments, as well as industry members, educational organizations and public stakeholders to ensure mission success; and,

- 5) NASA's Education initiatives will reach more American students than before.

With its network of NASA Centers and educational partners across the Nation, NASA is moving forward in each of these five areas. The President has issued a call to all Americans that there be *no child left behind* when it comes to Education. NASA has accepted its responsibility in that charge, and as one of the Nation's stewards in developing new technologies and opening new frontiers in air, space and innovation, we are prepared to share the promise and discovery of tomorrow's future.

- 1) NASA has made Education a core mission of the Agency.

Upon becoming Administrator, I was personally moved by my interactions with young people, at our Centers as well as in my own family, and the connection and inspiration that they feel to America's space program. Young people are full of wonder and discovery and NASA has a responsibility to help those traits mature. As we seek to improve our life here, and extend life beyond our known universe, we must work to inspire our children to explore the great frontiers of our solar system and conquer the challenges of propulsion, human biology and technology that keep us close to our home planet. That means we have to help our students understand how mathematics, science, engineering and technology come together to make exploration and innovation possible. Too many students avoid these subjects because they are seen as unpopular, not relevant to their daily lives, or too difficult. These very subject areas though are the fundamental baseline of NASA mission success. Without them, Space Shuttles do not fly, Space Stations are not built, aircraft are not tested and universes go undiscovered. We will not be able to explore without them.

Since its inception more than forty years ago, NASA has worked to share its findings and missions with the educators and the students who wanted to know more about the world and universe that surrounds them. The resulting programs and initiatives have targeted our Nation's K-12 students as well as our undergraduate, graduate and doctoral students. Today the Agency is served by many of the alumni of these efforts who work in various capacities at NASA Centers, universities, affiliated research organizations or in industry. The challenge before us today though is to extend the reach of our education efforts even further. Currently, NASA's education programs are distributed throughout our ten Field Centers, our five strategic Enterprises, as well as two Agency-wide functional offices. These efforts have been highly productive and have produced numerous success stories in students and classrooms across the country. But a more coordinated management approach will further enhance our reach and enable our performance level to reach new heights.

Recently, an internal Agency Task Force was formed to examine the Agency's current education mechanisms, its best practices, and ways that could merge existing efforts into a more cohesive and coordinated approach. The Task Force members will discuss with our educational stakeholders, particularly in the minority communities, those means that would help us reach more students and inspire them to pursue futures in mathematics, science and engineering.

The findings and recommendations from the Task Force are to be reported to me shortly. It is my hope that upon receipt of their final report, a new and re-energized NASA Education Program will be formed

to enhance the success of an already impressive history by NASA in the education area.

Once a new educational organization has been established, we will examine the unique tools and experiences that we provide to our Nation's educators. If we are to expect our teachers and professors to build the workforce of the future, we must provide the tools and experiences that can best help them participate in the missions and discoveries that NASA has made possible.

Extending our reach to underserved and underrepresented communities is critically important to me and to NASA. Our missions are meant to serve the interests of humanity and that means building a mission-oriented team that represents the best and brightest of America. The challenge before NASA as well as our Nation is reaching out to those communities that have traditionally not been a part of such a mission and opening the door of opportunity to invite them to take part. NASA's Kennedy Space Center and the State of Florida opened such a door this past year.

In a program inspired by Florida's First Lady, Columba Bush, Kennedy Space Center, in partnership with the Florida Department of Education, created the Student Educational Experience (SEE) – NASA Program. The SEE-NASA Program targets 5<sup>th</sup> grade students in Florida in schools that are underperforming in science and mathematics in an effort to help answer the question, “why do I need to study science and math?” By exposing these students to “hands-on” activities that relate to real-world circumstances as well as NASA missions, this program seeks to inspire these students to achieve things that they may never have considered before. While the SEE-NASA Program's goal is to inspire its students to further their study of mathematics, science and technology, it also works with these students' teachers to prepare them before the actual program begins, as well as following the program's conclusion. By providing these teachers with the “tools” to keep their students inspired and interested in mathematics and science long after they have left the Kennedy Space Center, a new door of opportunity for a new generation of explorers is opened. This door would not have opened though without the help of the Florida Department of Education and many other Florida education stakeholders.

This partnership between NASA and the State of Florida is not unique. NASA will continue to work with Secretary Paige and the U.S. Department of Education in all 50 states and with their respective education departments to understand not just the internal infrastructures of reaching teachers and students, but to understand each of the state's educational standards as well. With the increased attention our Nation is giving to student achievement, NASA too is paying attention to this national trend. Our states and our teachers are at the forefront of the education challenge and as such, NASA's education program is making every effort to listen and understand what their needs are and how we can assist them in ways that only NASA can. By providing them the “tools,” experiences and, where possible, training, NASA can better help these educators serve our communities and our children.

Such services to educators and students are not limited to those areas that reside near a NASA Field Center. NASA is working to ensure that every region of our country is reached. NASA's Aerospace Education Service Program (AESP) served over 1,500 schools during the 2001-2002 school year. This included 1,207 workshops for 14,093 teachers; 2,817 programs presented for 186,440 students;

and visited 2,249 classrooms touching 44,584 students. Located in all 50 states, the AESP enables NASA to send an expertly trained education specialist to visit school districts and provide training to teachers in mathematics, science, technology and geography instruction. By showing them real-NASA applications that can be taken back into the classroom, NASA helps these teachers to turn more students' minds toward the direction of mathematics, science and engineering.

In addition to AESP, NASA is also working with our Nation's museums and science centers to better educate the public about the universe, our role in it and the discoveries that NASA researchers and their partners are making. Recently NASA signed a Memorandum of Understanding (MOU) with six of the Nation's premier science centers/museums and the Association of Science and Technology Centers. This MOU is designed to help NASA reach even more communities by providing increased access to our missions, educational programming, and unique NASA experiences. Explorers reside across our country and by sharing our experiences in a variety of settings, NASA can bring them to our greatest adventures.

The American Museum of Natural History's Rose Center for Earth and Space, located in downtown Manhattan, provides in-person and virtual/electronic programming to students, families and educators on the formation of our galaxy, the creation of stars and the expansion of our universe. In addition to opening their minds about the surrounding universe, the Museum's Earth Science Bulletin provides a virtual source of news breaking events that are occurring on our planet (i.e. volcanoes, hurricanes, earthquakes). By providing such real-time information and "educating" visitors about our planet, NASA and its Museum/Science Center partners are promoting better understanding of our Earth and our universe. The Rose Center was also the site of last week's presentation of the flags flown for the victims of the World Trade Center lost on September 11<sup>th</sup>.

The Agency also links inquisitive minds to its various missions through the power of the Internet. NASA's presence on the World Wide Web has provided millions of students with the information they have wanted to know about the planets, our astronauts, and our on-going exploration of the universe. By giving students a "passenger seat" for the mission of their interest, the Agency looks to feed their curiosity and encourage them to study the disciplines that will take their knowledge, and NASA's further. NASA's efforts under the President's Management Agenda and its "E-Government" initiative are accelerating and expanding these opportunities and in the Fall of 2002, more educational programming directly linked to NASA's upcoming missions to the International Space Station and Mars exploration will be available on-line.

In addition to utilizing the Internet to connect students and educators to our missions, NASA also has an accomplished presence in television as well. This past Saturday, June 15, 2002, the NASA's CONNECT™ program, "Geometry and Algebra: The Future Flight Equation," received a regional Emmy award in the category "Children's Programming" in a competition sponsored by the Washington, D.C. Chapter of the National Academy of Television Arts and Sciences. This is the fifth Emmy the NASA CONNECT™ series has received and the eighth Emmy in the Agency's history. "Geometry and Algebra: The Future Flight Equation" focuses on experimental aircraft and the Hyper-X Research Vehicle. NASA CONNECT™ is a research and standards-based, award-winning series of

mathematics-focused, instructional programs for students in grades 6-8. Each program in the series includes a 30-minute instructional broadcast, an educator guide, and an interactive web-based component. Programs in the series establish a connection between the mathematics, science, and technology concepts taught in the classroom to those used everyday by NASA researchers. The educator guide, containing a hands-on activity, and the web-based component reinforce and extend the objectives presented in the program. The NASA CONNECT™ program is broadcast nationally on Cable Access, ITV, and PBS-member stations.

While NASA's programming may be available in many of the Nation's classrooms, computers, museums and science centers and televisions, the Agency will continue to explore new avenues to help open the minds of more students to the promise that mathematics, science, engineering and technology pose for their future. With the addition of Educator Mission Specialists to NASA's astronaut corps, the Agency's educational horizons and capabilities will continue to expand. The launch of Barbara Morgan, following core completion of the International Space Station, will be our first step in this new ambitious effort. Those that follow Barbara will build upon her success and take our Education mission to even greater heights.

## 2) NASA accepts the responsibility of inspiring the next generation of explorers.

Our Nation's educators hold one of the world's most influential and esteemed positions. They are molding the future of a country that has explored the world and its surrounding universe in ways and means once never imagined. Regardless of their age, the students that sit in today's classrooms will inherit a legacy marked by huge strides in technology and innovation. Our challenge at NASA is finding the men and women who will take these technologies and innovations to their next level. Our charge as a Nation and as an Agency is to do everything we can to prepare that next generation for that responsibility.

For years, NASA has offered unique opportunities for educators and students to participate in inspirational, "once in a lifetime" educational opportunities. Whether as students participating in a KC-135 parabolic flight experiment, constructing payloads and small launch vehicles as part of the National Student Involvement Program (NSIP), or by polishing mirrors for a satellite - and then tracking its orbit via computers and telescopes, each of these examples are all opportunities that NASA has uniquely enabled. The Agency recognizes its unequaled position and the responsibility that comes with it.

The Agency imperative for pursuing a renewed focus to education is immediate. At NASA's Marshall Space Flight Center in Huntsville, Alabama, 62 engineers out of the 3,000-person workforce are under 30 years old. Our over-60 population, across the Agency is three times larger than the under-30 workforce. Inspiring the next generation of explorers to enter fields of science and engineering is critical to NASA's success in reconstituting our workforce for the 21st Century challenges.

NASA is not alone in its search for enthusiastic and qualified human capital. Throughout the federal government, as well as the private sector, the challenge faced by a lack of scientists and engineers is real and is growing by the day. A recent Wall Street Journal article, dated June 7, 2002, chronicled the

challenge faced by our Nation. The article written by Sharon Begley, entitled “*As We Lose Engineers, Who Will Take Us Into the Future?*” explained that, “Engineering bachelor’s degrees peaked in 1985 at 77,572, and plunged to 60,914 in 1998. By the mid-1990s, more kids were getting degrees in ‘parks and recreation’ than in electrical engineering.”

In sharp contrast, the demand for math, science and engineering disciplines is growing. The US Department of Labor’s Bureau of Labor Statistics echoes these trends. In their report, *Working in the 21<sup>st</sup> Century*, the Bureau states that seven of the ten fastest growing occupations require some application of mathematics and science.

In building a future workforce, our Nation must begin to understand the qualities and challenges that will be encountered in constructing it. That means preparing future workers with the skills necessary to compete.

In the State of Mississippi, they are working to build a future workforce to serve the emerging geospatial technology industry. These technologies comprise one of the fastest growing high technology sectors today, with expected growth to \$21 billion by the year 2005. NASA’s Earth Science Enterprise and the NASA John C. Stennis Space Center Office of Education are leading the National Workforce Development Education and Training Initiative. Representing a collaboration of organizations, the Initiative is based on the successful *Mississippi Model*, which is customer driven, utilizes existing infrastructures and is designed to create systemic change. As a result, all 7-9<sup>th</sup> grade students in Mississippi will learn about the applications of geospatial technologies and how they may become part of that workforce.

Our Nation’s future is built upon the minds that accept the hard challenges that mathematics, engineering and science offer. That is why we at NASA through our current and future missions, as well as through our re-energized Education Program, will work with the Congress and our federal, state and local government, and other public and private sector educational partners to reverse this trend.

NASA’s missions once inspired a generation to explore the stars and race for the Moon. While our missions and points of destination have changed, the same challenges remain very much a part of our future. We accept our responsibility to inspire a new generation of explorers and we will succeed in ways that only NASA can.

- 3) NASA is reaching out to minority communities to make them integral partners in the Agency’s mission.

NASA’s success is a result of the talented men and women who come together around a mission, form a team around that effort and work tirelessly and cooperatively for mission success. The results of these efforts are legendary but at NASA these results occur everyday in ways heralded in news headlines and in so many countless, anonymous ways. Regardless of the team’s recognition, the formula has always been the same – empower talented people with a mission and resources to make something happen and let them go. Before that team can achieve success though, team members have to be built.

At Marshall Space Flight Center, the Student Launch Initiative (SLI) is helping to build those future NASA Team members. The SLI involves high school and college students in the design, building and testing of reusable rockets with associated scientific payloads. This unique, hands-on experience allows students to demonstrate proof-of-concept for their designs and gives previously abstract concepts tangibility. At the high school level, several schools compete to construct a vehicle designed to reach an altitude of one-mile. In addition to actual vehicle performance, schools are also evaluated on design and other criteria. Two local universities have recently completed the first year of the program with one institution constructing a vehicle that reached two miles and the other providing the payload. Future plans for the college level could include expansion of the program to a regional or statewide level.

While the SLI program is a good example of the Agency's efforts to develop future NASA team members in Alabama, the Agency is also aggressively exploring the expansion of its team in the Nation's minority communities. As the Bureau of Labor Statistics Report, "*Working in the 21<sup>st</sup> Century*," has chronicled, "minorities are the fastest growing part of the labor force." As such, NASA must do everything it can to further enhance their involvement in our existing efforts, as well as future missions. Such efforts must target multiple areas and NASA has already begun a strong foundation upon which to build.

Programs such as the Summer High School Apprenticeship Research Program (SHARP) provide over 450 students the opportunity to participate in an intensive science and engineering apprenticeship program at a NASA Center or affiliated research facility. These eight-week paid apprenticeships enable participating students during the summer months to participate in hands-on research with NASA mentors and become exposed to careers related to mathematics, science, engineering and technology. In 2001, 79% of the students participating in SHARP were from minority communities. Of the more than 5,000 students that have participated in SHARP, 90% have enrolled in college majoring in a math, science, engineering or technology discipline and 80% of SHARP's students are now working in math, science, engineering and technology related fields.

NASA plans to highlight our substantive programs to integrate underrepresented students into research and education opportunities and use the NASA mission to motivate and prepare today's students and educators to become tomorrow's scientists, mathematicians and engineers. These efforts come from our reaching out to Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), and Other Minority Universities (OMUs) to enhance their involvement in the Agency's mission.

Before many of these students enter these institutions though, an educational pipeline must be created that engages students in the earliest grades and motivates them to continue on through college, graduate school and postgraduate studies. By using NASA's educational resources--including scientific, technical and educational personnel--to strengthen pre-college programs, NASA assists students to be (1) fully prepared in college preparatory subjects when they enter college, (2) able to handle the rigorous academic level of college, and (3) motivated to continue to advanced degrees in mathematics and science disciplines. Through these early interventions in mathematics and science, we hope to



achieve NASA's goal "to inspire the next generation of explorers" and increase the number of underrepresented students in that exploration. Pre-college programs, such as Science, Engineering, Mathematics, Aerospace Academy (SEMAA); Precollege Achievement of Excellence in Mathematics, Science, Engineering and Technology (PACE/MSET); Saturday Academies; TEXPREP; and Projecto ACCESS, provide hands on/minds on experiences that motivate and prepare students to pursue NASA-related careers.

NASA is also opening opportunities for minority institutions to contribute directly to improving our Nation's scientific literacy. Through broad-based, competitive, multidisciplinary research programs operated by undergraduate, graduate and faculty research programs and University Research Centers (URC), some major scientific research contributions have been made. Some examples include:

- Tennessee State University Center for Automated Space Science observed the first direct detection of an extra-solar planet, marking the first time that properties of such a planet could be directly measured.
- Tuskegee University Center for Food and Environmental Systems for Human Exploration of Space flew the sweet potato stem-cutting experiment on the Space Shuttle Columbia, mission STS-93, which flew in July 1999. This valuable research will contribute to our knowledge of the care and feeding of humans on long duration space flight.
- The University of Puerto Rico at Mayaguez partnered with NASA's Goddard Space Flight Center in Maryland to establish a satellite receiving station for one-tenth of the typical cost for remote-sensing ground stations. This project was recognized as a model for academic institutions seeking low-cost remote-sensing receiving capabilities.
- The NASA Center for Applied Radiation Research (CARR) at Prairie View A&M University is seeking ways to incorporate and optimize radiation tolerance of a human spacecraft by taking a systems approach to the spacecraft design. The research at Prairie View studies the effects associated with radiation interaction with materials, as well as radiation effects on electronics and radiation shielding. CARR's projects are linked to the expressed needs of NASA's Human Exploration and Development of Space Enterprise and the Aerospace Technology Enterprise.

For our country to be able to venture forward with future missions in aeronautics and space exploration, the participation of the minority community is critical to achieving mission success. It is the diversity of a team's membership, at NASA or any other organization that enables it to do the most amazing things. Our leadership in these areas has been good but there is still much we can do. As world history can attest, exploration opens many doors of opportunity and at NASA we will continue to open those doors everyday. With leaders and examples such as Mar's Program Director, Dr. Orlando Figueroa; the 2002 Black Engineer of the Year, Kennedy Space Center's Kelvin Manning and Olga Dominguez, our Agency's Chief Environmental Officer to guide us and our Nation's youth, the next generation of explorers will leave no child behind.

- 4) NASA will work with other federal, state and local governments, as well as industry members, educational organizations and public stakeholders to ensure mission success.

While there are missions and activities that only NASA can perform, it cannot complete its education in a vacuum. Partnerships and relationships with stakeholders in government, the private and public sector, both inside and outside of education must be engaged. Each of these constituencies has a vested interest in forming the human capital that can contribute to our Nation's future in mathematics, science and technology areas. NASA has begun discussions with the interagency team that is implementing the US Department of Education's and National Science Foundation's (NSF) Math and Science Partnerships. The resulting dialogue between NASA, the Department of Education, NSF, and the other Initiative partners has revealed how we can complement each organization in developing interest and engagement in math, science and technology related careers by America's students.

The challenge before this partnership is a significant one. The recently issued report by the National Commission on Mathematics and Science Teaching in the 21<sup>st</sup> Century, *Before It's Too Late*, captured the urgency of this challenge when it declared that, "more than 240,000 new and qualified science and mathematics teachers are needed in our K-12 classrooms over the next decade (out of a total need for an estimated 2.2 million new teachers)."

Addressing such circumstances is a challenge that requires teamwork on the part of our National and state governments. NASA has accepted this challenge and helped form Texas Aerospace Scholars (TAS). As an outcome of a partnership created in 1999 among the NASA Johnson Space Center (JSC), the Texas State Legislature, schools, universities, and diverse community organizations like Rotary and the Houston Rodeo, TAS encourages students to consider careers in science and engineering. In the Middle School Aerospace Scholars program, teams of 8th grade teachers from across the state of Texas begin this year-long program with a one-week summer professional development experience at JSC, learning how to integrate distance learning programs (videoconference and webcast technology) into their classrooms during the school year. The Community College Aerospace Scholars (CAS) provides 300 community college students and 30 professors with web-based assignments and a two-day visit to JSC where students and professors interact with engineers and scientists. Finally, High School Aerospace Scholars, for high school juniors, combines an interactive online learning experience along with a weeklong residential experience during the summer at JSC.

NASA's Space Grant Consortium is another example of partners working together to advance the mission of education. Located in all 50 states and Washington, D.C. and Puerto Rico, Space Grant links 512 of the Nation's colleges/universities, 73 businesses/industries, 36 State/Local governments and 165 other affiliates into a network that is advancing space and aeronautics related research. Over 3 million people have been served by this program while helping to build the next generation of leaders, researchers, innovators and explorers in space-related fields. NASA's \$19.1M investment in FY2000 was leveraged with \$55M in other funds from industry, academia and other government funding sources. This type of partnership distributes not just the responsibility for funding such an enterprise, but

shares the participation and subsequent return on investment. When formed by Congress in 1989, it was never intended for NASA to be the sole beneficiary of Space Grant. Rather, it was the Nation who stood to benefit from developing increased research capabilities in our colleges and universities and a skilled workforce that could share its knowledge and experiences with industry, academia and NASA.

Each of the education partnerships I have highlighted are emblematic of the approach that NASA takes to all of its missions. Each partner and team member brings their expertise to the table and through dialogue, understanding and working together, goals are achieved and missions are completed. Our mission in education and in inspiring the next generation of explorers is one mission though that will never be complete, or one in which we will tire. Our future rests with each subsequent generation and each of us must do our part to prepare one another for a future of challenge, promise and unlimited possibility. NASA welcomes all partners in that endeavor and looks forward to working with each of them.

5) NASA's Education initiatives will reach more American students than before.

The programs and initiatives that I have presented to you in this submission represent a small but illustrative part of NASA's present education capabilities. While all are impressive and accomplished and have made a difference to lives of many people, there is still more that can be done by this Agency to reach out to more of our Nation's youth.

In a talk at Syracuse University two months ago, I outlined NASA's new vision and mission and announced the initiation of the Educator Mission Specialist Program as the signature piece of NASA's renewed commitment to education and teachers. The first EMS, Barbara Morgan, will soon be assigned to a Space Shuttle flight after completion of the International Space Station core configuration. The opportunity to inspire students, motivate teachers, and engage the public through Ms. Morgan and future Educator Mission Specialists, whose profession as teachers is to communicate scientific and technical concepts, will enable NASA to invigorate a resurgence in educational achievement in science, mathematics, engineering, and technology.

To fully realize our vision for the EMS program we have begun to outline the details of this initiative with the U.S. Department of Education, the National Science Foundation, and other education organizations. We will implement the EMS program in full consultation and collaboration with the educational community, to help ensure that the potential of this national asset is fully realized.

Not only will we involve professional educators in the implementation of the EMS program, we hope to involve students throughout the country in this process as well. We're planning to ask their opinions of what makes a good teacher of science, mathematics, or technology. We want to know what activities and investigations from this "classroom" in space will engage and inspire them. Most of all, we want to engage their participation and inspire the next generation of explorers.

By harnessing the awe-inspiring power of space exploration to the teaching experience, the EMS program and the other education activities I've described today will enable NASA to make an

important contribution to the goals embodied in the landmark legislation that Congress enacted with the passage of the President's historic legislation that there be *No Child Left Behind*. The minds of America's young people need inspiring missions of exploration to challenge and motivate them to great achievements. Our nation's teachers need NASA's mission of discovery to serve as a teaching tool for powerful ideas. The EMS program will engage students and their teachers in new learning opportunities and promote interest and achievement in science, mathematics, and technology.

The future steps that we take – a new, more coordinated Office of Education to better serve our Nation's students and educators; the expansion of our Astronaut corps to include Educator Mission Specialists; increased utilization of the Internet and information technologies to connect students, educators and the public at large to our missions here on Earth and beyond; as well as many more – are all steps that NASA takes in the great frontier of expanding human knowledge.

The vision for NASA is to improve our lives here on Earth, extend our lives to reaches far beyond our home, and find life beyond. Everyday that vision is being fulfilled at NASA. Barriers that once held us back are being broken and unexplored frontiers, once never imagined, have become our daily realm for operation. We accept this vision with vigor and boundless energy but that excitement comes with immense responsibility. The greatest mission this Agency has ever accepted is helping to open the mind of a child to unimagined possibilities.

The men and women of NASA are committed to ensuring those who follow us in the great missions of tomorrow are prepared to accept the challenges and circumstances that come with them. Our efforts in science, mathematics, engineering, and technology education, in partnership with many team members from throughout the Administration, the Congress, and the public and private sectors, will prepare those generations. It is a mission that we accept and a mission that we will not fail to accomplish. The next generation of explorers demands our success. It is an adventure that NASA welcomes.

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